## REMARKS

With this Response, no claims are amended or canceled. Therefore, claims 41-71 are pending.

## CLAIM REJECTIONS - 35 U.S.C. § 103

### Claim 41

Claim 41 was rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,356,528 of Lundby et al. (hereinafter "Lundby") in view of U.S. Patent No. 5,461,646 of Anvari (hereinafter "Anvari"). Applicants respectfully submit that this claim is not rendered obvious by the cited references for at least the following reasons.

Claim 41 recites the following:

> **determining** that an effective signal strength of a signal on a wireless communication link using signal diversity in one or more of the space, time, or frequency domains is insufficient to provide a desired communication range;
>
> **introducing signal diversity in an additional** of the space, time, or frequency domains **into the wireless communication link in response to the determining** to generate multiple decorrelated signals corresponding to the signal **on the wireless communication link**; and
>
> selectively combining the decorrelated signals and demodulating the combined, decorrelated signals to generate a representation of the content of the signal.

As a first matter, Applicants note that claim 41 recites "determining that an effective signal strength of a signal ... using signal diversity ... is insufficient to provide a desired communication range...." The Office Action fails to reject this portion of the claim. The Office Action has failed to point to anything in the cited references that is purported to disclose determining that an effective signal strength of a signal using diversity is insufficient to provide a desired communication range. Rather, the cited references make vague reference to the benefits of using signal diversity as being that diversity mitigates fading and mutual interference between signals (see Lundby at col. 3, lines 21 to 30; Anvari at col. 2, lines 45 to 50). As shown, it is known that diversity provides improved signal quality, but the references fail to disclose or suggest determining that an effective signal strength on a wireless communication link that is already using diversity is insufficient to provide a desired communication range. In order to provide a **prima facie case** of obviousness, as per MPEP § 2143, the Office Action must show that each and every element of the claimed invention is disclosed by the cited references. Applicants submit that the Office Action has failed to even provide a prima facie case of

obviousness. Nowhere does the Office Action point to anything in the cited references that are purported to disclose determining that an effective signal strength on a wireless communication link that is already using diversity is insufficient to provide a desired communication range, as recited in Applicants' claim. For at least this reason, the rejection of this claim in the Office Action is defective.

Compounding an already defective rejection is the fact that the Office Action "waves its hands" at subsequent claim elements and the cited references, and alleges that the cited references disclose the claimed invention without giving substance to the language of the claims or the disclosure of the cited references. In the Response to Arguments section of the Office Action, at page 2, the Office Action points to Lundby at col. 3, lines 21-36 as disclosing all elements of the claim. Applicants recite herein the entirety of this portion of the cited reference:

> Antenna transmit diversity as well as multi-carrier transmission are promising new technologies that improve transmission resistance to fading by offering space and/or frequency diversity. In the antenna transmit diversity case for example, the data to be transmitted is encoded into symbols, which are then distributed among the antennas and transmitted.
>
> Many techniques have been proposed for mitigating mutual interference between signals transmitted from the different antennas. Such techniques include delay transmit diversity, orthogonal transmit diversity (OTD), time switched transmit diversity (TSTD), time delayed transmit diversity (TDTD), and multi-carrier transmit diversity (MCTD). **Each of these methods shares with the others a common goal of providing additional diversity in the transmitted signal** through space, time, frequency or code space.

Emphasis added. Applicants acknowledge the convenient recitation of the expression "providing additional diversity" in the cited reference, which at a casual glance appears to be similar to the language of the claimed invention, which recites "introducing signal diversity in an additional of the space, time, or frequency domains into the wireless communication link...." Despite the apparent similarities, Applicants submit that no reasonable interpretation of the cited reference can be made to make the disclosure of Lundby to disclose or suggest what is recited in Applicants' claim.

According to the express language of the claim, as pointed out above, the communication link is using diversity, and additional diversity is introduced. Applicants point out that in the Applicants' claim, the additional diversity is introduced "in response to the determining [that the effective signal strength of the signal is insufficient to provide the desired communication range]...." As Applicants have attempted to point out in previous Responses, nowhere in the cited reference is there any suggestion or consideration that additional diversity be added to a

communication link that is already using diversity. Lundby recognizes at col. 3, lines 40 to 42 that "methods for introducing diversity into a transmitted signal are almost limitless by their very nature;" however, Lundby fails to even consider adding diversity to a communication link that is using diversity in response to determining that the effective signal strength of a signal on the communication link using diversity is insufficient to provide a desired communication range, as recited in Applicants' claim.

Furthermore, Anvari is not cited for curing these deficiencies of Lundby, nor indeed does it. Anvari, as Lundby, fails to even consider adding diversity to a communication link that is using diversity in response to determining that the effective signal strength of a signal on the communication link using diversity is insufficient to provide a desired communication range, as recited in Applicants' claim.

While it is true that Lundby and Anvari suggest various types of diversity, the diversity schemes in the cited references are **fixed**. Throughout the references, the assumption is that diversity may be used in a communication link, and multiple diversity methods may be employed on the same link, but the same diversity scheme is always employed on a link. Thus, the diversity scheme is fixed and does not change. Throughout Lundby, and the Anvari reference, a predetermined, fixed type of diversity is assumed. Applicants provided such an argument in their last Response. The Office Action in dismissing Applicants' Response as "not persuasive" fails to even address Applicants' argument. The Office Action has failed to point to anything in the cited references, or provide any reasoning to suggest that the diversity schemes in Lundby are not fixed, or show anything that would suggest the diversity schemes of the cited references do change. Applicants note that such an argument cannot be made because no support for it exists in the references.

Coming back to a point previously raised, Applicants further observe that the expression "providing additional diversity in the transmitted signal" conveniently appears in Lundby. Col. 3, line 35. However, the expression in that reference fails to suggest anything other than having a signal that uses multiple forms of diversity. Multiple types of diversity are explained prior to the appearance of this expression in Lundby, and the different forms are tied as having "a common goal of providing additional diversity in the transmitted signal...." Applicants submit that pulling this expression out of the context in which it is used in the reference may initially appear helpful for an improper hindsight analysis; however, even assuming improper hindsight analysis were an

acceptable form of examination, the substance of the cited reference fails to support the interpretation given it in the Office Action.

The disclosing of multiple forms of diversity **does not** constitute the disclosing or suggesting of **introducing additional** diversity into a wireless communication link in response to determining an effective signal strength of a signal is insufficient, as recited in claim 41, even assuming the skilled artisan were to know from Lundby that the common goal of the multiple forms of diversity is to introduce additional diversity into a transmitted signal.

As discussed above, the references, whether alone or in combination, fail to disclose or suggest at least one feature of the claimed invention, and so fail under MPEP § 2143 to support an obviousness rejection of the invention as recited in claim 41.

**Claim 42**

Claim 42 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lundby and Anvari in view of U.S. Patent No. 5,369,412 of Tsujimoto (hereinafter "Tsujimoto"). Applicants respectfully submit that this claim is not rendered obvious by the cited references for at least the following reasons.

Claim 42 recites the following:

> providing a wireless communication link with a level of diversity;
> detecting a degradation of signal quality on the wireless communication link; and
> **dynamically introducing additional diversity on the wireless communication link** to result in the wireless communication link having diversity in two or more of the space, time, or frequency domains in response to detecting the degradation of signal quality, to generate a plurality of decorrelated signals to be selectively combined with at least the use of a weight vector and demodulated to provide a representation of an originally transmitted signal.

Lundby and Anvari, and in particular, the expression in Lundby "introducing additional diversity," are discussed in detail above. For the sake of brevity, Applicants hereby reference the discussion of these references made above with respect to claim 41. The discussion above applies equally well to claim 42. Lundby and Anvari fail on their merits to support a rejection of claim 42, at least because they fail to disclose or suggest introducing additional diversity on a wireless communication link that is using diversity. Applicants note that claim 55 includes similar limitations, and this discussion of claim 42 applies equally to claim 55.

Applicants herein repeat below what was presented in a previous Response, which is conveniently **not discussed** in the Response to Arguments section of the Office Action. As previously stated in the Response of August 8, 2006:

Applicants note that the Office Action at page 3 refers to col. 3, lines 28 to 50 of the reference as disclosing the invention. Applicants observe that the paragraph uses the expression "introducing diversity into a transmitted signal" at lines 35 and 40 to 41. Applicants note that the expression as used in the reference refers to the fact that a signal is prepared for transmission, and then processed to be transmitted with diversity. Thus, diversity is "introduced" into the signal. However, nowhere does the Lundby reference, nor the other cited references, suggest that signals are transmitted with a particular diversity scheme, which is then changed to introduce additional diversity into the signal. In contrast to the cited references, claim 41 refers to introducing diversity in response to determining a signal is degraded, and claim 42 refers to providing a signal with a diversity level, and dynamically introducing additional diversity. Both claims recite "introducing" diversity into a signal that has a level of diversity, which may be referred to as a diversity scheme. An existing diversity scheme is dynamically changed. In contrast, the references simply suggest implementing a diversity scheme. Thus, the references fail to disclose or suggest at least one element of the claimed invention, and so fail to render obvious the invention as recited in the independent claims. The addition of the Tsujimoto reference fails to cure the deficiencies of Lundby and Anvari. As with Lundby and Anvari, Tsujimoto fails to disclose or suggest at least the claim limitation of introducing diversity in response to determining a signal is degraded, as in claim 41, or providing a signal with a diversity level, and dynamically introducing additional diversity, as in claim 42. Whether alone or in combination, the references fail to disclose or suggest at least one element of the claimed invention, and so fail to support an obviousness rejection of the independent claims under MPEP § 2143.

Applicants herein repeat that Tsujimoto fails to cure the deficiencies of Anvari and Lundby. Applicants note that the Office Action fails to provide reasoning to suggest why Applicants' argument is "not persuasive." The Office Action simply recites the disclosure of Lundby, and nakedly asserts that such disclosure teaches the invention as recited in the independent claims. As stated above, the recitation of multiple forms of diversity does not provide support for the rejection of the independent claims 41 and 42.

**Claims 43-71**

These claims were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lundby, Anvari, and Tsujimoto in combination with a variety of references. Specifically, claim 43 was rejected in combination with U.S. Patent No. 6,643,494 of Worthy (hereinafter "Worthy"); claim 44 was rejected in combination with U.S. Patent No. 6,591,382 of Molloy et al. (hereinafter "Molloy"); claim 45 was rejected in combination with Molloy and U.S. Patent No. 5,722,051 of Agrawal et al. (hereinafter "Agrawal"); claims 46-51 were rejected in combination with U.S. Patent No. 6.052,594 of Chuang et al. (hereinafter "Chuang") and U.S. Patent No. 6,170,075 B1 of Schuster et al. (hereinafter "Schuster"); claims 52-54 were rejected in combination with

Chuang, Schuster, U.S. Patent No. 3,195,049 of Altman et al. (hereinafter "Altman"), and U.S. Patent No. 5,881,105 of Balachandran et al. (hereinafter "Balachandran"); claim 53 was rejected in combination with Chuang, Schuster, Altman, Balachandran, and U.S. Patent No. 6,694,155 B1 of Chin et al. (hereinafter "Chin"); claim 55 was rejected in combination with U.S. Patent No. 6,044,349 issued to Tolopka et al. (hereinafter "Tolopka"); claim 56 was rejected in combination with Tolopka, Molloy, and Agrawal; claim 57 was rejected in combination with Tolopka, Chuang, and Schuster; claims 58-59 were rejected in combination with Molloy; claim 60 was rejected in combination with Molloy and Agrawal; claims 61-64 were rejected in combination with Molloy and Chuang; and claim 65 was rejected in combination with Molloy, Chuang, Schuster, Altman, and Balachandran.

Each of these rejections is based on the rejection under Lundby, Anvari, and Tsujimoto, which is shown to be defective in many respects above. The above-mentioned references are not cited as curing the deficiencies of Lundby, Anvari, or Tsujimoto as pointed out above, and Applicants submit that they indeed fail to cure the deficiencies set forth above. Specifically, claims 55, 58, and 67 are independent and recite limitations similarly directed to the limitations of introducing additional diversity in a communication link having a level of diversity, as discussed above with respect to Lundby, Anvari, and Tsujimoto. Thus, the discussion above of the deficiencies of Lundby, Anvari, and Tsujimoto applies also to claims 55, 58, and 67, and the cited references fail under MPEP § 2143 to render these claims obvious. Applicants thus submit that claims 41, 42, 55, 58, and 67 are nonobvious over the cited references. Claims that depend from a nonobvious base claim are also nonobvious. MPEP § 2143.03. Thus, the references, whether alone or in combination, fail to disclose or suggest at least one element of the invention as recited in the independent claims, and so fail to render obvious the invention as recited in the dependent claims.

## CONCLUSION

For at least the foregoing reasons, Applicants submit that the rejections of the claims have been overcome herein, placing all pending claims in condition for allowance. Such action is earnestly solicited. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the above-referenced application.

Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,
**BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, LLP**

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/Vincent H. Anderson, Reg.# 54,962/
Vincent H. Anderson
Reg. No. 54,962

12400 Wilshire Blvd.
Seventh Floor
Los Angeles, CA 90025-1026
Telephone: (503) 439-8778

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Theresa Belland Date